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ESSAY,

ON

HÆMOPTYSIS,

BY

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AN
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ON
Hæmoptysis;

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By David Bowman Of

VIRGINIA.

Sit mihi fas audita loqui ..... Virg.l

Preface.

In entering upon the consideration of a disease, at once so interesting and important, I cannot but feel under great, and almost insurmountable difficulties, arising from the necessarily limited state of my knowledge, augmented by an almost total want of experience, particularly such as would lead to the due investigation of a subject, offering so wide a field of inquiry and research. Aware of this together with the inability on my part properly to perform the task before me; I have to beg the lenity of a wise and discerning faculty, under whose observation and inspection this imperfect attempt to comply with their requisitions may come. The necessity, however, of subjecting it to the rigid scrutiny of such a body, induces me to do so, (though reluctantly) with the utmost deference and respect.

Of Hæmoptysis

Hæmoptysis derived from the Greek words, aima, blood, and, ptuo, to spit, is a genus of disease arranged by Cullen in the Class Pyrexia, order Hæmorrhagia, and signifies a spitting of blood, or a discharge of blood from the mouth, brought up by more or less hawking & coughing. This definition, though, perhaps, somewhat exceptionable, may be considered as correct as is necessary, hence its adoption; not from any conviction of its superiority over others, but from the consideration that no two agree precisely as regards this point.

Hæmoptysis may proceed from the lungs, trachea, or fauces, each characterized by some peculiarities affording diagnostic marks hereafter to be mentioned. As Hæmoptoe may occur at any period of life, but it most frequently happens about the age of puberty, or from sixteen to thirty five, dependent, as is supposed by

Dr Cullen, on the preponderance of the arterial system over that of the venous. It is most frequent in Spring & the beginning of Summer than at other seasons, & is not unfrequently of periodical recurrence. To account for the latter fact, the same writer supposes the overstretched & relaxed vessels more readily to admit of congestion, which being the case the same phenomena follow as a necessary consequence. The writings of Dr Mead, and more recently those of Dr Moseley, seem to lead to the opinion, that it depends on lunar influence. The latter gives several cases going to establish this fact. This it would appear from some barometrical observations, depends on the comparative levity of the atmosphere, at the time of the full & change of the moon, which we know acts powerfully in causing hæmorrhage, hence the more frequent occurrence of Hæmoptysis at those than at any other periods.

This hæmorrhage may be either active or passive, the former arises from increased vascular action, the latter when no increase of vascular action is perceptible) a distinction

I am inclined to believe, founded upon correct principles, notwithstanding it has been denied by some, particularly by Rees an English writer, who denies that such a thing as active hamorhagy from the lungs can exist & now looks upon the opinion as Chimerical.

There are according to Cullen five species of Hæmoptysis, 1st Hæmoptysis Plethorica, 2nd Hæmoptysis Violenta, 3rd Hæmoptysis Phthisica, 4th Hæmoptysis Calculosa, & 5th Hæmoptysis Vicaria. A more modern writer gives six, as occurring from different causes 1st Occasioned by rupture, a blow, or wound, 2nd By excessive inflamation, 3rd By Metastasis, from the suppression of other discharges 4th By plethora of the lungs 5th By periodical discharges & 6th By Tubercles.

Of the Causes of Hæmoptysis. They may be divided into predisponent or remote, & occasional or exciting. The first most of which may be considered in a great degree hereditary, implying in itself some peculiarity and faulty conformation; as a disproportion between the lungs and other parts of the body, a laxity in the structure of the

vessels of the lungs, a peculiar configuration of the body, such as a long neck; narrow chest, depressed sternum, inversion of the xiphoid cartilage, and prominent shoulders. This configuration of the body, independent of any hereditary predisposition, renders persons much more liable to Hæmoptysis, particularly such as are of a fair, florid complexion, with a fine white skin, & perspire much from the forehead and palms of the hands; of a sanguine temperament & endowed with great sensibility & irritability, by no means uncommon in persons of this disposition. To these may be added the suppression of any accustomed evacuation as the menstrual flux in females; drying up habitual ulcers, issues, or chronic eruptions of the skin; the suppression of Epistaxis; the suppression of Hæmorrhoids; owing perhaps to that intimate sympathy existing between the rectum and pulmonary system. Persons who have suffered the amputation of any considerable limb are said to be more obnoxious to it than they otherwise would be.

The second or exciting causes, are 1st, such as act

directly on the lungs, as singing, or loud speaking, long continued; blowing on wind instruments; wounds, blows, congestions of the lungs, coughs &c. 2nd Such as act on the system generally, as violent exertions of any kind, running, leaping, wrestling, lifting heavy weights, and other athletic exercises, the application of ligatures so as to stop the circulation, particular postures of the body, a plethoric state of the system, hectic fever, irregular living, excess in eating or drinking, high excitement of the passions, external heat, cold suddenly applied, great & sudden diminution in the weight of the atmosphere, in short whatever increases the circulation, or favours irregularities in the distribution of the blood. The mode of action peculiar to most of these causes is the same, viz. that of acting as a stimulus, thereby accelerating the circulation, favouring any irregularity, or determination otherwise ineffectual in causing hemorrhage. Cold when suddenly applied, does not act as a cause by repelling the blood on the internal organs, as has been asserted but by the reaction of the system; no such thing as hemor-

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-rhage taking place, when cold has been so applied as to suppress reaction. As regards the operation of diminished pressure of the atmosphere, in causing hæmorrhage, the opinion of Dr Cullen, who supposes that it acts by causing an expansion or rarefaction of the circulating fluids, is doubtless correct. This is certainly a direct result of such diminution, in addition to which it may be remarked, that the vessels lose their accustomed support, & consequently their antagonising power. The want of oxygen to decarbonize the blood may have some effect in producing Hæmoptysis by hurrying the respiration to counterbalance this deficiency. If as is the opinion of some this hæmorrhage depends on the presence of Carbon, affirmed by them to lessen the cohesion of the blood, a deficiency of oxygen, may be considered as causing Hæmoptysis in this way.

Why these causes induce Hæmoptysis sooner than any other hæmorrhage, except Epistaxis, is perhaps sufficiently obvious, when the delicate structure of the lungs, the large size of the pulmonary vessels, their extensive, numerous & minute ramifica-
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tions over the bronchial cells, imbedded in the most loose & attenuated cellular texture, & covered only by a thin membranous envelope, are taken into consideration; there is no difficulty in understanding, why causes, acting so powerfully on the whole system, should be particularly calculated to produce ~~haemorrhagic~~ ~~apoplexy~~ hæmorrhage in such a structure as the lungs.

An attack of Hæmoptysis brought on by the above mentioned causes, is for the most part preceded by a sense of weight and anxiety about the præcordia, slight difficulty of breathing, pain in the breast or some part of the thorax, a sense of heat under the sternum, a dry tickling cough, a sensation of throbbing or pulsation, & a dryness or huskiness of the mouth fauces & throat. Immediately before the appearance of the blood, some irritation is felt at the top of the glottis which may descend lower, & it is said, even to the Scrobiculus Cordis. This gives rise to a hawking or coughing, which brings up blood generally thin, frothy, small in quantity, & of a florid red colour, preceded by or mixed with mucus of a saltish taste. The blood may, however, be thick and of a dark or even black-ish

-ish cast, from having remained some time in the bronchial cells before it was discharged, nor is the blood so florid, or arterialized when proceeding from the trachea or fauces. This is the most frequent form of its attack, though it is sometimes ushered in with coldness of the extremities, shivering, pain in the back & loins, flatulency, costiveness, & lassitude, followed by a reaction in the system, inducing a hot stage; previous to the occurrence of the hæmorrhage the pulse is frequent, quick, full, & often hard, the face is flushed, & occasionally there is slight pain in the side. This state of the system is followed by a flow of blood sometimes large in quantity, at others, small, & simply brought up by hawking & coughing, as was before mentioned, the pulse now becoming softer & less frequent. The patient is now for a longer or shorter time relieved, the irritation, however, again returns, & there is a series of phenomena similar to the former. This continues to be the case until it soon almost altogether disappears; in other cases, it recurs frequently, & there is greater quantities discharged, sometimes it is profuse and even induces serious suffocation. This is perhaps of rare

occurrence, as it for the most part subsides spontaneously or yields to the interference of art. When it does not prove immediately fatal, and is excessive, the countenance becomes pale & haggard, the mind sinks into the most wretched disquietude, & the unhappy sufferer, robbed of the generous stamina of life, is almost ready to sink under the weight of despondency & disease.

Of the Pathology of hæmorrhage perhaps nothing need necessarily be said here, but, as it must exercise great influence over our method of treatment, a few remarks may not be exceptionable. By Cullen it was supposed to consist in some inequality in the distribution of the blood occasioning congestions; the vessels thus becoming preternaturally distended were excited to increased action, which increased force exerted upon the extremities of the vessels, opened them by anastomosis or rupture. That rupture may take place when the exciting causes, are sudden & violent will not perhaps be denied, but, it is of much rare occurrence than is generally believed. The capillary system is perhaps mainly concerned in hæmorrhage, & hence it appears as a most common occurrence, a direct exuda-

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tion or effusion. The vessels being in a state of preternatural excitement allow no blood to pass into them as in inflamation, action becoming more violent, blood is effused or forced through the exhaling pores, precisely as in case of dropsy a serous fluid is effused from less violent action. In passive hemorrhagy on the contrary, there is a want of tone, a general relaxation, from the prostration or loss of that vital power necessary for their healthy action, consequently there is what may be called atonic exudation, (which though extremely rare is sometimes seen,) as in scorbutic hemorrhage, the petechia of low fever, small pox, & particularly from the bite of some venemous reptiles.

The Diagnosis, though sometimes difficult, can perhaps, always with proper attention to the circumstances of the case be made with some degree of accuracy, and correctness. To determine whether the blood comes from the internal surface of the mouth, fauces, or cavities of the nose, is often important, not more for the conduct of our treatment, than for the satisfaction of the patient. This may be done by the examination of the

blood, which is found perhaps more so florid as that from the lungs, it is generally brought up without coughing & upon inspection the source often becomes evident. It may however be brought up by coughing, in this case, we are guided by the appearance of the blood, & the absence of those symptoms which have heretofore been pointed out as incident to a discharge from the lungs, together with the age, habits & predisposition. From Hæmatemesis it is readily distinguished, as the blood usually appears in greater quantities from the stomach than from the lungs, it is of a darker colour, more grumous, & mixed with the contents of the stomach, to which may be added, that Hæmatemesis is of much rarer occurrence, than Hæmoptysis, is seldom unaccompanied by some morbid affection of the stomach, as anxiety, pain, & a sense of weight & fullness, together with the total absence, of any pulmonary affection, and the great prostration of the system particularly the heart, & arteries, incident to Hæmatemesis, doubtless the result of the intimate sympathetic connection of the stomach with the brain, the influence of which so greatly modifies the circula-

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tory action. Females are said to be more obnoxious to Hæmatemesis, than males, in consequence of suppressed menses, the vomiting of blood becoming vicarious to that discharge, which circumstance may assist in making a correct diagnosis.

Of the Prognosis. In drawing correct prognostic deductions of the result of Hæmoptysis, there is some difficulty, so that a decided opinion, in the commencement of an attack can rarely be ventured on. It may be considered as unattended with danger, when the discharge is not excessive, when no symptoms of Pulmonary Consumption accompany, or have preceded the hæmorhage, when it leaves behind no cough, dyspnœa, pain in the breast, or any other affection of the lungs, & also its happening to persons of a strong & vigorous constitution. Vicarious discharges of blood are perhaps more of such serious import as those occurring under different circumstances. In some diseases particularly, Pneumonia, Pleurisies & various forms of fever, so far from being detrimental, it is considered omenous of a favourable result. The circumstances leading to an unfavourable prognostication are, the discharge of

very large quantities of blood, being dangerous, in proportion to the size of the vessel from which the discharge proceeds; the frequent recurrence of the attacks; and its taking place in persons of a lax & delicate habit, in whom the predisposition to the disease exists. Hæmoptysis cannot however be considered as always a primary disease, it is often symptomatic & is almost the uniform attendant of Phthisis Pulmonalis, a disease so intractable, so repulsive, & unyielding to the resources of our art, as justly to be numbered among the Opprobria Medicorum.

Post Mortem examinations, when it proves immediately fatal from the rupture of a considerable vessel, or in any other way, shew a quantity of Clotted or Coagulated blood, between the pleura & lungs, the air cells & minute ramifications of the bronchiæ are filled with blood of the same appearance, & there is commonly some marks of inflamation about the parts from which the blood has issued. When it terminates in Phthisis as has been mentioned above is sometimes the case, the morbid appearances are the

same as those exhibited in bodies dead of that disease, as tuberculated, granulated, ulcerous, & even cancerous lungs, causing excavations in their substance, erosion of the vessels &c.

Of the Treatment. In entering upon this part of the subject, a question at once presents itself. Does it become necessary to interfere in cases of hæmorrhage? This question has doubtless arisen from the Stahlian doctrine promulgated on this subject, which we may here pass over unnoticed, & permit it to rest in silence with its ingenious author. It is enough to say, that, to disagree with its advocates is proper. Hæmorrhage cannot be considered necessary, on the contrary it should be avoided, and never left to the conduct of nature, too often blind in the direction of her ire. Considering it, therefore, necessary to interfere with the operations of nature, I shall proceed to the enumeration of the remedies usually employed in such cases; having regard to the opposite states of the system, and first of Active Hæmoptysis. These are prescribed to answer two indications. 1st To

suppress the coagulation of blood, by diminishing the activity of the circulation; 2d To subdue that morbid state of the system, upon which its continuance and return depend. As preparatory to the first, the patient should be ordered to bed, his shoulders elevated, his extremities extended, the room should be well ventilated, of a cool temperature, and every source of irritation avoided, in short, the strictest antiphlogistic measures are to be inculcated.

The first measure which presents itself is venesection. The state of the system, & the appearance of the blood, seem loudly to demand it. The best practice, is to detract a large quantity at a time, and not by small & repeated bleedings. To this, however, objections have been urged, by our writers whom name I have had occasion to mention before, it is deemed wholly inadmissible & even deleterious, which opinion is corroborated by a second, whose powerful judgement, has led him to say, that, "those who are too fond of using the lancet, should remember, that, as yet there is no repeal of the sixth Commandment". On the contrary, may be formed the concur-

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rent testimony of many in support of the practice; "that increase of arterial action" says a modern writer "which causes the rupture of the vessel, or effusion of blood in any other way, is only to be removed by the lancet." and nothing it may be added can be substituted for it. I am aware that bleeding is said to increase that plethora which it was intended to remove; as regards this, it may be asked; who will not call in the aid of the other antiphlogistic measures to prevent the recurrence of that state of plethora which a timely resort to the lancet has removed? This should be aided by cupping, or leeching either on the back or breast, as may be thought best: A tea or table spoonfull of finely pounded culinary salt, held in the mouth & swallowed by degrees, is sometimes found beneficial; cold affeleications to the thorax, axillæ, & particularly to the scrotum & feet should not be neglected; the use of cold drinks, wrapping the body in cloths wet with vinegar & water, even the immersion of the body in cold water, or suddenly sprinkling it have been recommended strenuously by some, which

practice, has received the sanction of the truly ingenious Darwin.

The refrigerants, particularly nitre, are highly recommended. it may be given either alone, in combination with Tartar Emetic, or in form of the nitrous powder. Dickson the author of a small treatise on this disease, in the 4th Vol: of the Medl: Observations & Inquiries, published 1752, says of nitre "that when given early in an Hæmoptysis, I can almost equally depend upon it, as upon the Cortex Peruvianus in a genuine intermittent." Whether this is going too far or not, I will not pretend to decide; it is undoubtedly a valuable article & contributes much towards a cure. The occasional use of laxatives, such as manna, tamarinds, Castor oil, Sulphate of Soda or Magnesia, the Tartrate of Potash & soda, and others of this class (with the exception of the Phosphates, which from their exciting character are not so well suited to the case as those formerly mentioned) will be found highly beneficial. Active purging is perhaps in this as in all other pulmonary diseases, prejudicial. Vascular action being now sufficiently

subdued, blisters, or Sinapisms to the breast or back, will be of much advantage & are not to be overlooked; they bring about a revulsive action by their counter irritation, & hence prove of the utmost utility. To these may be added ~~stimulo~~ irritating enemata which act on the same principle.

Hitherto nothing has been said of Emetics, so much celebrated in this disease. One of the most strenuous promoters of this practice was Dr Bryan Robinson of Dublin; Rees, Willis, and many of the present day, concur in their testimony in favour of their use. The same plan was adopted by Cullen, but he was led to abandon them from the temerity of their operation. The precise circumstances under which they should be exhibited are not clearly pointed out. It is to cases induced by previous depletions, bordering on passive hæmorrhage, I am induced to think, that, they are by far the most appropriate. Dr Robinson supposes they act by constringing the extreme vessels, if so, they are ill suited to induced active hæmorrhage. Most of the cases related by him were of a chronic kind & I believe exclusively of this nature

-tion. If, therefore, such was their mode of action, it must be Haemorrhage of this kind, in which they prove so advantageous, and Rees who so loudly applauds the use of Emetics, will not, as before said, admit the existence of active hemorrhage from the lungs. That they are most useful in reduced cases of Hæmoptysis, no doubt is entertained on my part, but as regards their mode of action, the opinion of Dr Robinson is incorrect. Of their astringent effect I am wholly incredulous on the contrary they may be considered of an opposite character, but, it is that peculiar pathological state of the system, induced by Emetics, changing the morbid action of the vessels, especially the Capillaries, which proves so advantageous. Much more benefit, we are told, is to be expected from nauseating doses, & such is the practice pursued in our own country, as well as on the Continent of Europe. Of the class of Emetics the Ipecacuanha is perhaps the best, & may be combined with a small portion of Tartar Emetic, which renders it more active. To obtain its nauseating effects, small doses are

to be used as ¼ to ½ gr., given at intervals as the case may require. This article is divested of the uncertainty of the metallic salts, & is not so harsh in its operation.

Many of the Narcotic medicines, have been used in Hæmoptysis, as the various preparations of Hyoscyamus (particularly the oil so much extolled by Hufeland), Cicuta, Digitalis &c. From the peculiar action of the Digitalis it was even proposed by some, as a substitute for the lancet, & numerous were the reports in its favour: experience has, however, taught that this is incorrect. "If after bleeding the pulse continues more rapid than in health and the system is too much debilitated to resort to direct depletion, we may then have recourse to Digitalis, & as one of our resources, on such occasions, it often displays its best powers." It should be given in small doses, so as just to affect the pulse & with the utmost caution: when given in large doses, it is apt to excite vomiting and by the violence of its action produce irreparable mischief.

Of all the articles used in this disease Opium will be found, perhaps, most useful, under the circumstances hereafter to be mentioned. Possessing although a stimulant, so admirably the power of subduing irritation (so incident to this disease) we are not surprised at the high encomiums bestowed upon it. To exhibit it in the induced state of the system is improper, but, if, after vascular action is subdued, there is much irritation, attended with cough, Opium may justly be considered as herculean remedy, & unquestionably claims our admiration & praise. To Passive haemorrhage, under such circumstances it is perhaps still better adapted, proving as in the former case of the greatest utility.

Both the vegetable & fossil astringents, are used to suppress this haemorrhage: Of the first the Kino & Catechu deserve the most confidence, but, they certainly yield to the superiority of the second. At the head of this class stands the Saccharum Saturni, which given in doses of from 2 to 5 gr. every 2 or 3 hours, either alone or combined

with Opium, comes great powers. We are, however, told by Cullen, that the Alum is preferable; this, though, a useful remedy is unquestionably inferior to the former; his statement arising doubtless from an erroneous notion of their action, considering it pernicious. Of the preparation of Copper & Zinc little may be said; the Sulphate solution so much esteemed by Mosely is perhaps sometimes useful, but, more from its nauseating quality, than from its astringency. The Mineral & vegetable acids have been used, & in some cases with advantage; they will be found most useful in acidulating the drinks, thus allaying the thirst often attendant on the disease.

As regards astringents it may be remarked, that they are, for the most part, improper in unreduced active hæmorrhage, & such is perhaps the most prevalent opinion on this subject. It is said by Good that general astringents are now Contraindicated, however useful they may be in passive hæmorrhage. When given, therefore, depletion should precede, so long as there is increased

vascular action; the system being, when action is subdued, in a state somewhat analagous to that of passive hæmorrhage.

Of the Lichen Islandicus one much used, little need be said; being a very innocuous article, it is probable, that, in this way, if at all, it may be found useful & not from any active property peculiar to it.

The state of the patients mind undoubtedly influences the body, & when there is a disposition to indulge in any of the depressing passions, it may, in many cases be permitted. They benumb & chill every energy of the body like the stream of Lethe, and 'tis then that "the body grows thin in the midst of wealth, the limbs tot-ter though surrounded by cordials, & the man voluntarily starves himself in the granary of plenty."

I am now to treat of the 2nd division or Passive Hæmoptysis. Having formerly pointed out in what this consists shall proceed to the plan of Treatment to be adopted. The medicines used in this form of Hæ-

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mostly are chiefly of the corroborant kind. Of Emetics I have given my views in a former part of this essay & shall, therefore, say nothing of them now. The astringent articles become here the bulwark of safety, & as before said, the Acetate of lead, stands preeminent, when tied as directed above. Of wine, porter, and other stimulants, nothing needs be said; they may certainly be considered inferior to Opium in every respect, & should not be substituted for it. As a tonic in this state of the system, the Peruvian Bark has long held an almost unrivalled sway. It is certainly of utility, but as few will take a sufficient quantity to have any decided advantage, more benefit may perhaps be derived from some of the neater preparations of this article particularly the Quinine. For the same purpose the Calybeate preparations especially the Tincture Ferri Muriatis, or the Sulphate of Iron, also some of the preparations of Copper, are prescribed &, often with much advantage. To these may be added the Mineral Acids, the best of which is the Acidum

Sulphuricum Aromaticum, together with many others of the same class, an enumeration of which is unnecessary.

Cold applications are here of decided utility, when properly timed, care is, however, requisite in their use from the liability of the system to atonic congestions. Such congestions from weakness of vascular action, when occurring, are to be removed by the use of blisters, sinapisms, dry cupping, or in some cases the detraction of a small quantity of blood, by cups or leeches, by irritating enemata &c.

Nothing has as yet been said of abstinence from drink, as an important measure in Hæmoptysis. Two cases are recorded in the 3rd Vol. of the Med. Facts & Observation, where this plan was completely successful; the quantity allowed being only a pint daily. Ronley in his treatise on Menorrhagia, recommends this plan of treatment as useful. That it may prove advantageous in both cases by preventing plethora, we are not disposed to doubt, hence its application to hæmorrhage both of an active and passive nature.

Having considered the means necessary to answer the

first indication, the second now claims attention, which constitutes the Prophylaxis. In laying down proper Prophylactic directions, I shall only notice them in a general point of view. Each person & case have some peculiarities, hence much will depend on sagacity and judicious discrimination. They are as follows 1st Care should be taken to avoid whatever may cause excitement, as indulgence in violent passions, irregularities in eating or drinking, in short a complete avoidance of all the exciting causes. The diet should be low, consisting of milk oysters &c; if meats are allowable, the white meats are to be preferred, the meals, small, frequent, and well regulated so that the stomach may properly perform its healthy functions. It should, however, be adapted to the different states of the system, being either cordial, & corroborant, or otherwise as the case may require.

2nd To obviate taking cold, by proper clothing, which should be warm, particularly flannel worn next the skin, the feet should be kept dry & warm, exposure to a

damp cool air, is always to be avoided, & also sleeping in damp tents or rooms.

3rd. To take such exercise as will impart tone to the system; the best is sailing, swinging, travelling in an easy carriage, or in some case, riding a short distance on horse back. Fatigue is in no case to be indured.

4th To watch with attention the pulse & respiration, any disorder in either, must be immediately removed by the proper measures.

5th The frequent use of Emetics, is said to prove extremely advantageous, by keeping up the equality in the circulation, diverting blood from the lungs, removing cutaneous constriction, & by calming the general condition of the system.

6th To have recourse to salivation as a decisive resort. "The impression made on the mouth by a salivation, moves morbid action from the lungs, & by the general and revolutionary operation of the process on the system, it may entirely supplant the disease, substituting its

own peculiar action in place of it." It should however be recollected that when connected with a strumous diathesis, as is not unfrequently the case, or with Tubercular Consumption, it is for the most part wholly inadmissible. Connected with pulmonary Consumption, "Hæmoptysis" may be considered the effect of a disease, which will too often baffle the concentrated skill of the most judicious & enlightened. This disease (pulmonary Consumption) being for the most irremediable it becomes our duty to support declining life by cordial & strengthening remedies; to comfort the unhappy by our unremitting attention; to solace them in their hours of despondency with the gilded prospects of brighter days, & above all, to direct them to the ever-ministering hand of an all-wise Creator who,

> ....."law eternal doth decree,
> That all things born shall mortal be."

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In drawing to a close this imperfect essay, justice to my feelings demands, that I should tender to each of

the Professors, my thanks & acknowledgments for the invaluable instruction received from them, by their unremitting and indefatigable exertions, to promote a science, the benefits of which are alike felt by all. That you, Gentlemen, may long live & enjoy the honour & reputation, you so justly merit; thus you may continue to enrich medicine, with other & still greater discoveries, already preceded by such, as shall shed around your names imperishable renown & do honour to the age and land which gave you birth, is my sincere wish. Nor can I feel less gratified in knowing that you have left the path illumined by the brightness of your footsteps, still open, and that Science continues to hold out allurements and rewards, to her persevering and industrious votaries.

Finis.